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# Coding Boot Camp



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# Session : Py2

Introduction to PyScripter for Python  
Developers





# About Kiriakos Vlahos

- Professor of Management Science and Data Analytics
  - Open-source enthusiast
  - 35 years of programming experience (Delphi, Python)
  - Developer of PyScripter
  - Developer/Maintainer of many Delphi libraries, notably Python for Delphi
- 
- Github home: <https://github.com/pyscripter>



# Session outline

- PyScripter Overview
- Requirements and Installation
- User Interface
- The Editor
- Python Debugging





# PyScripter Overview

A full-page background image featuring an astronaut in a white spacesuit sitting on a metal crate on the lunar surface. The astronaut is holding a small device in their right hand. In the background, the dark, cratered surface of the moon is visible, along with a small lunar rover on the left. The Earth's horizon is seen in the upper left, showing a blue and white curve against the black, star-filled sky.



# PyScripter Overview



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- [Integrated Development Environment](#) (IDE) for Python
- Free and open-source
- Feature-rich but lightweight
- Easy to get started, but also attractive to professionals
- Developed with Delphi
- Strong user base



# PyScripter - History



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- Development started more than 15 years ago
- Initially hosted at Google Code
- Instantly became widely popular – many millions of downloads
- Development stalled when Google Code shut down
- Resumed a couple of years later at Github
- Strong following in the face of intense competition
- Recently Embarcadero provided sponsorship to the project



# Main Features

- Modern, customizable, styled user interface
- Editor with syntax highlighting and code folding
- Integrated python interpreter
- Code IntelliSense (code/parameter completion, hints, go to definition etc.)
- Integrated python debugging
- Project Management





# Advanced/Unique Features



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- Unit testing
- Post-mortem analysis
- Thread debugging
- Python path inspection and management
- Easy module installation with pip (external tool)
- Edit/run/debug scripts remotely in Linux and Windows servers
- Powerful integration with external tools
- Switching python versions *on the fly*.





# Requirements and Installation

A full-page background image featuring an astronaut in a white spacesuit sitting on a metal crate on the lunar surface. The astronaut is holding a small device in their gloved hand. In the background, the dark, cratered surface of the moon is visible, along with a small lunar rover on the left. The Earth's curved horizon is seen in the upper left, showing a blue atmosphere and a dark, cratered surface. The sky is filled with stars.



# Requirements and Installation

- Windows only
- Available in 32 and 64 bits (64-bits recommended)
- Works with Python 3.2 or later (use the latest python version)
- Windows installer or registry-free zip file





# Installation Instructions



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- If you have not installed python start by visiting [www.python.org](https://www.python.org). Then download and install the latest python distribution. Otherwise, you can skip this step.
- Visit the [Pyscripter download site](#) and *either*:
  - download and install the Windows installer (e.g. [PyScripter-4.1.1-x64-Setup.exe](#))
  - download the zip distribution (e.g. [PyScripter-4.1.1-x64.zip](#)) and decompress to a folder of your choice
- **Note: The 64-bit version of PyScripter (x64) works only on 64-bit Windows *\*\*and\*\** with 64-bit versions of Python. The 32-bit version (x86) of PyScripter works on both 32-bit and 64-bit Windows with 32-bit versions of Python.**





# PyScripter - Links



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- Home page: <https://github.com/pyscripter/pyscripter>
- Downloads: <https://sourceforge.net/projects/pyscripter/files/>
- Support: <https://groups.google.com/g/pyscripter>
- Blogs: <https://pyscripter.blogspot.com/>, <https://pyscripter.dev/>
- Translation home: <https://www.transifex.com/pyscripter/>





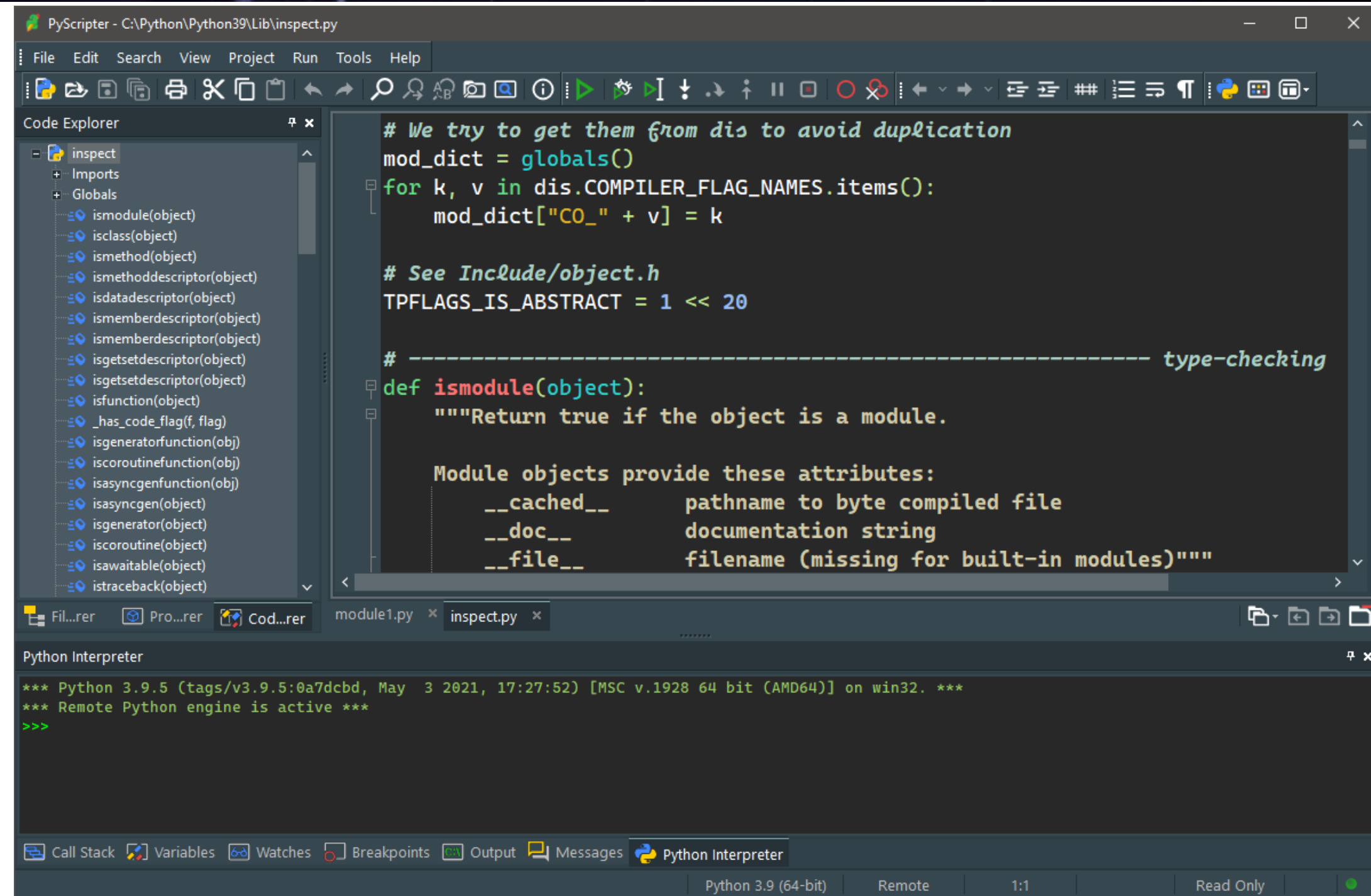
# User Interface



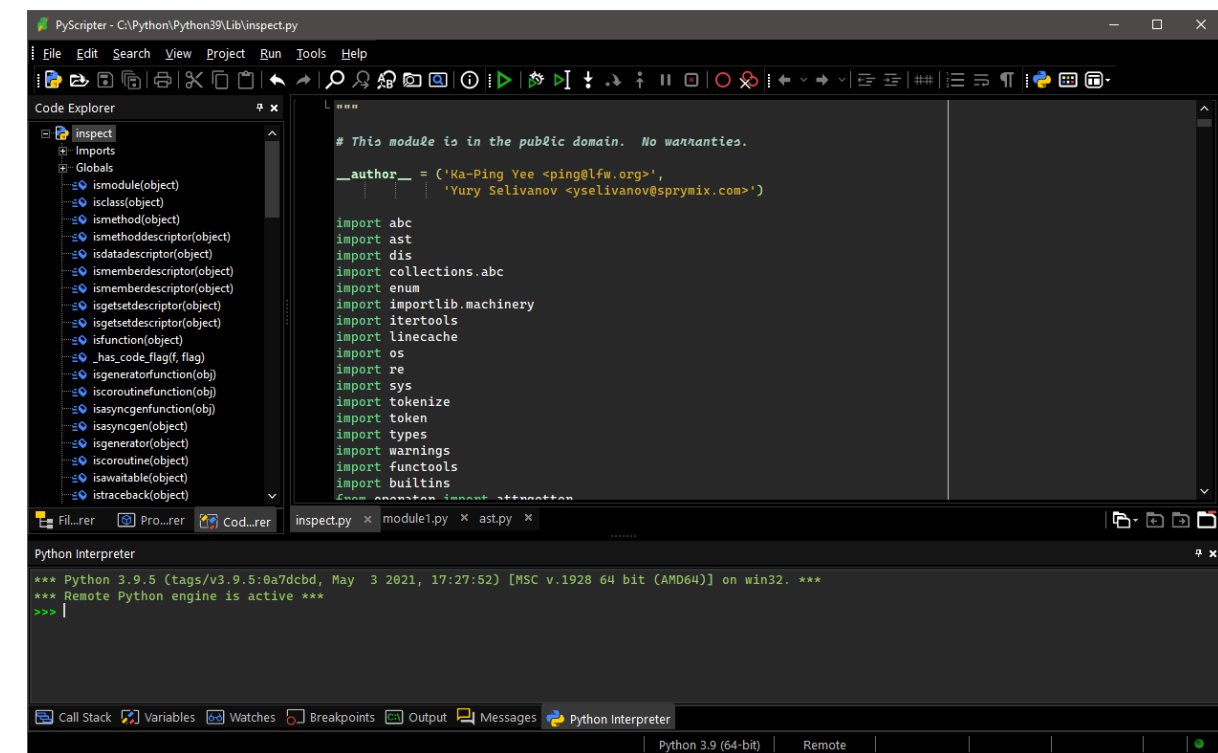
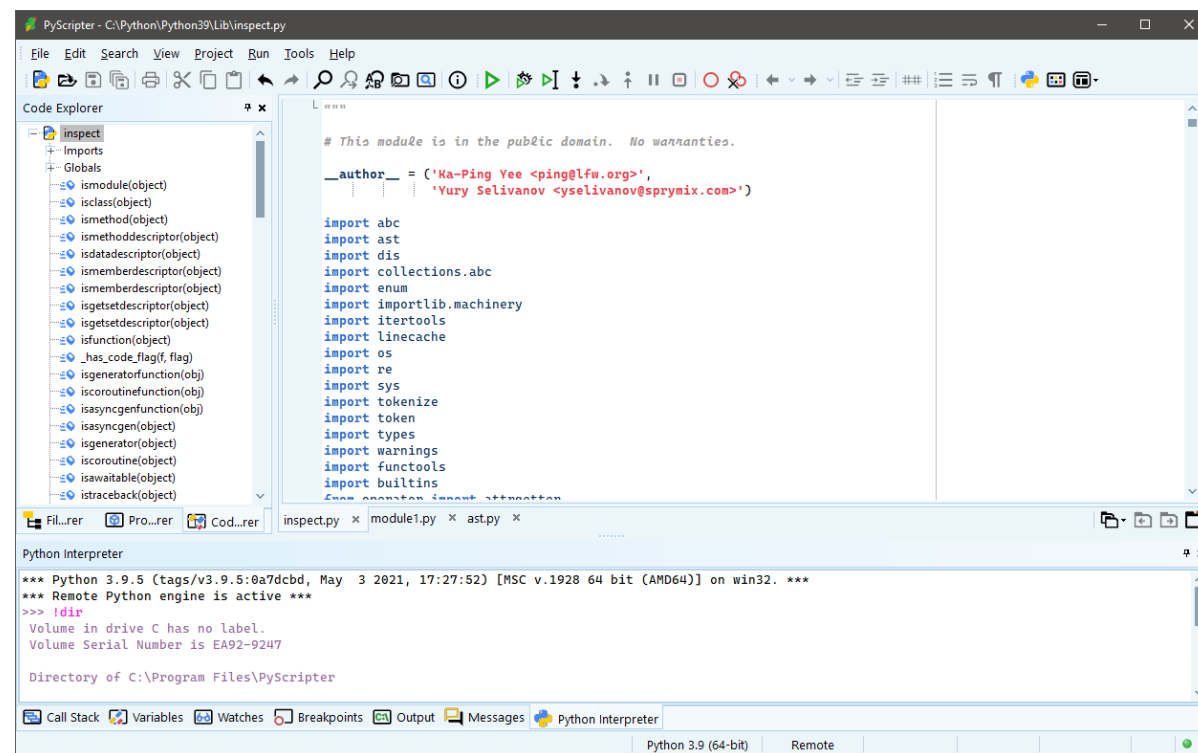
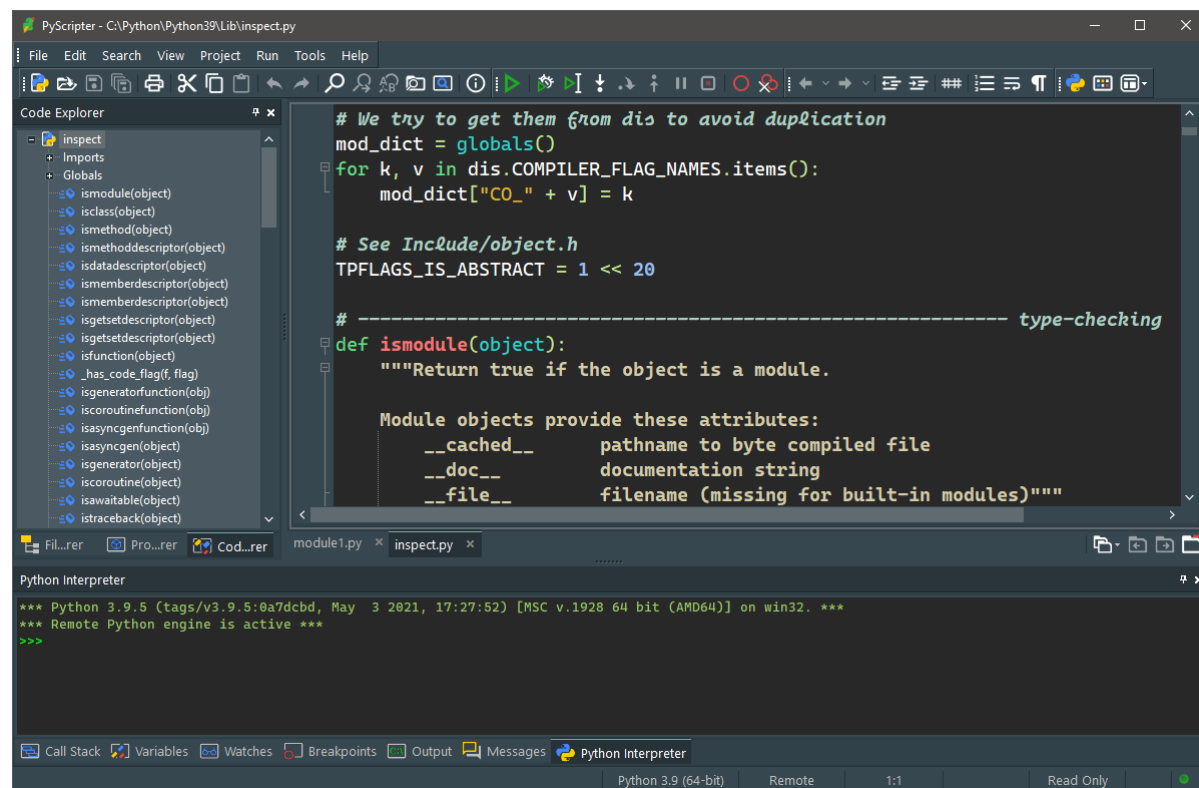


# USER INTERFACE

- Modern GUI with docked forms and configurable look&feel
- Editor workspace with tabs
- Material design with a bit of color
- Persistent layouts
- Switch between debug and standard layouts automatically
- UI translated in 15 languages



# Customizable styles and syntax highlighters





# Integrated python interpreter



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- Syntax highlighting
- Code completion
- Command history
- Serves as the *stdout* of running scripts
- Also serves as a system shell

Python Interpreter

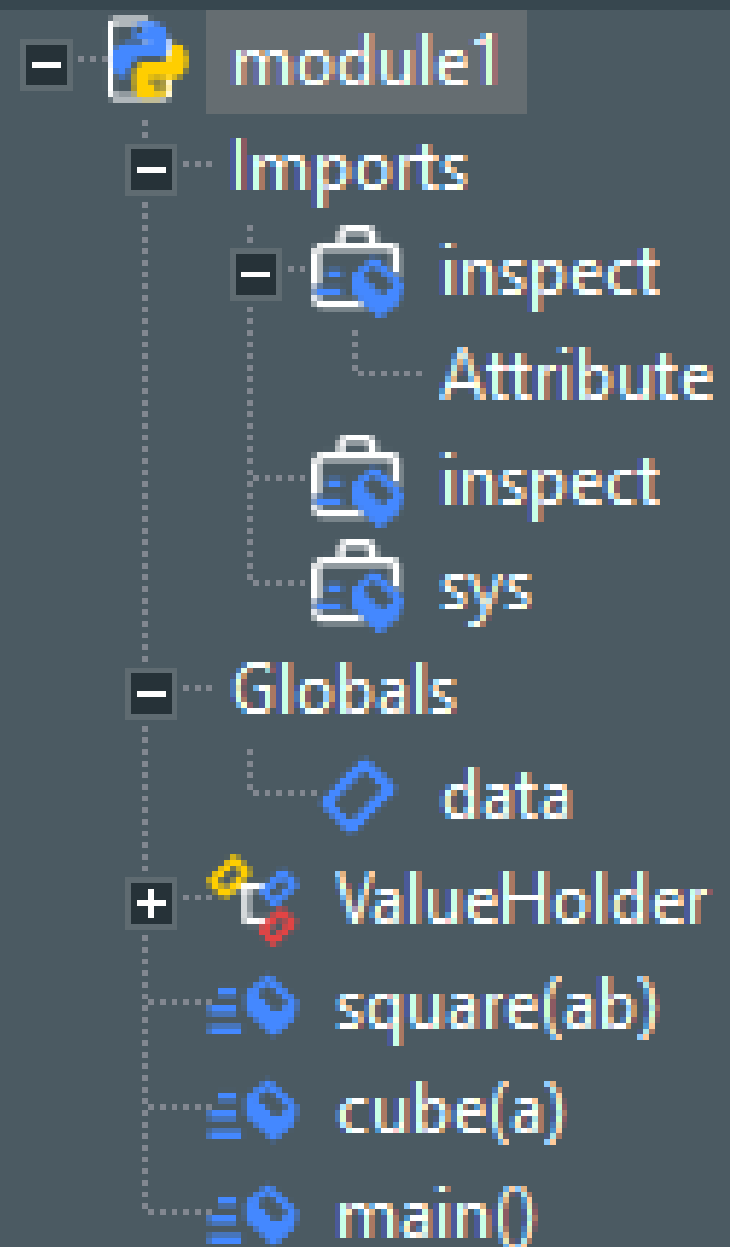
```
*** Python 3.9.5 (tags/v3.9.5:0a7dcbbd, May  3 2021, 17:27:52) [MSC v.1928 64
bit (AMD64)] on win32. ***
>>> dir()
['__builtins__',
 '__doc__',
 '__loader__',
 '__name__',
 '__package__',
 '__spec__',
 'logging']
>>> !dir
Volume in drive C has no label.
Volume Serial Number is EA92-9247

Directory of C:\Program Files\PyScripter

16-04-21  02:46    <DIR>          .
16-04-21  02:46    <DIR>          ..
16-04-21  02:46    <DIR>          Lib
16-04-21  02:46    <DIR>          locale
22-10-19  17:30             7,886 PyProject.ico
28-03-21  14:32        2,289,883 PyScripter.chm
16-04-21  02:25       17,477,632 PyScripter.exe
16-04-21  02:47         28,482 unins000.dat
16-04-21  02:46       2,558,817 unins000.exe
                    5 File(s)        22,362,700 bytes
                    4 Dir(s)   754,650,161,152 bytes free

>>> |
```

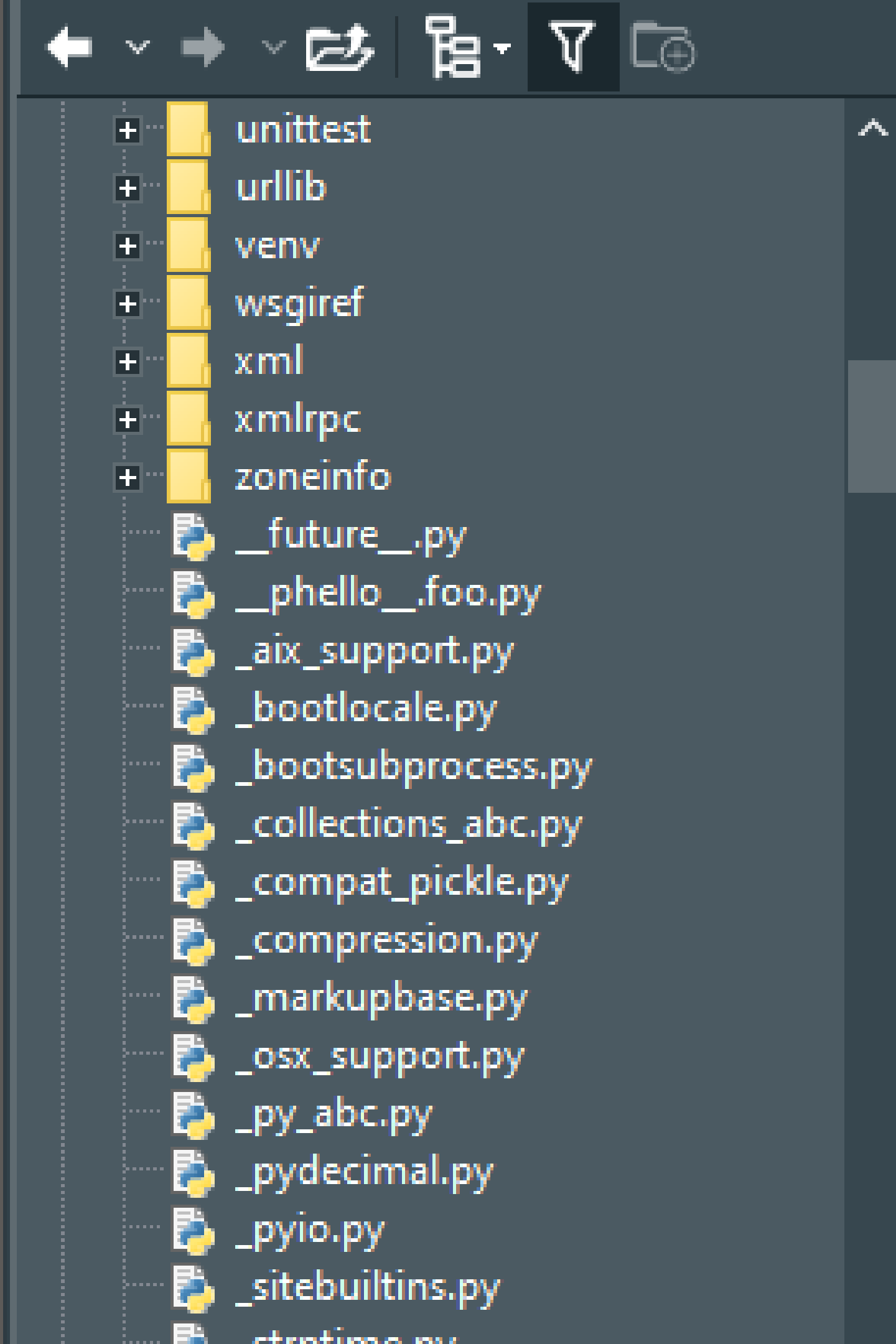




# Code explorer

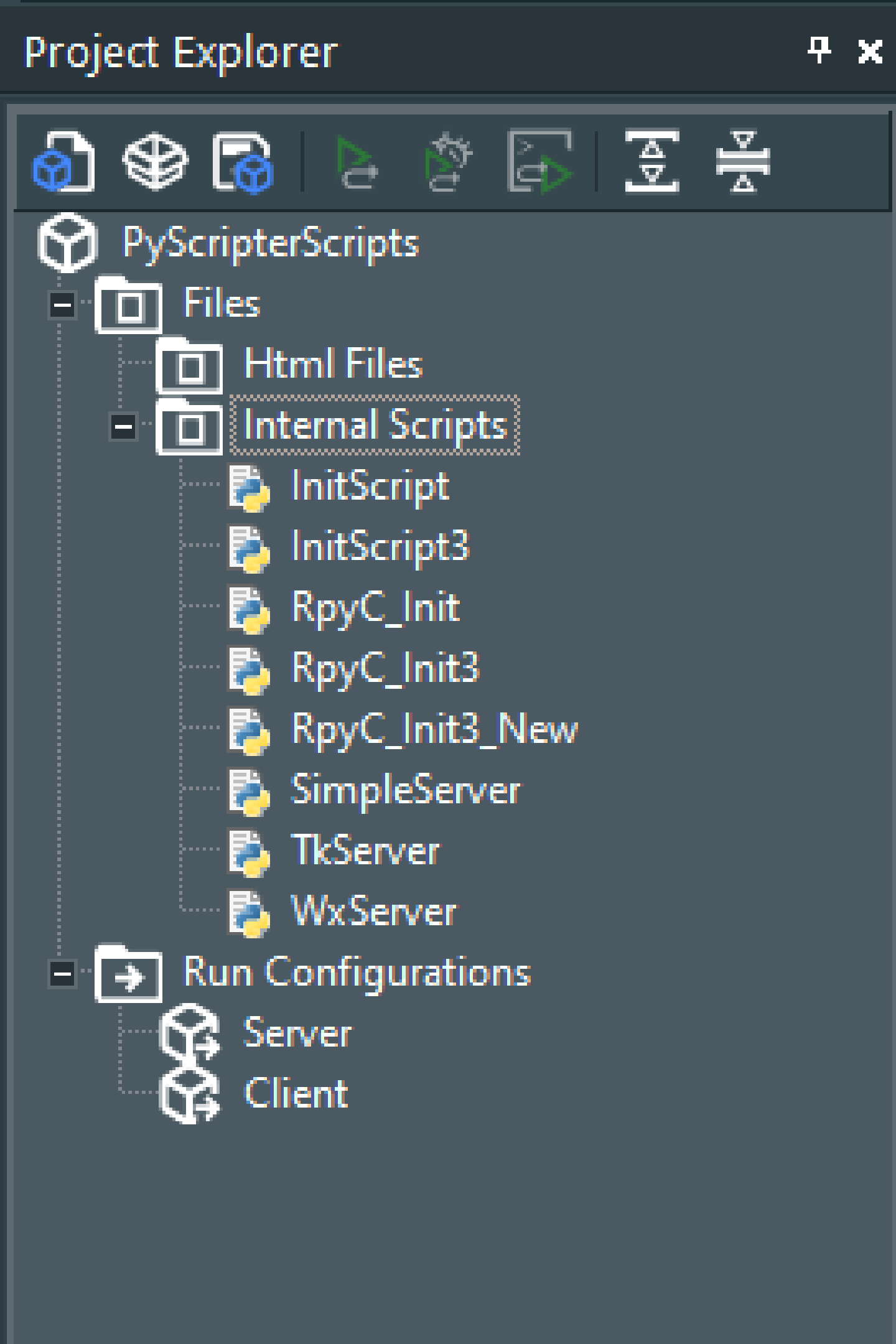
- Hierarchical view of module symbols
- Can synchs position with active editor both-ways
- Can be alpha-sorted
- Hints show symbol doc comment





# File Explorer

- Windows-like File Explorer
- Same context menu as Windows
- Easy navigation to python library paths
- With Tortoise-Git can serve as a git client



# Project Explorer

- Hierarchical organization of files
- Multiple run configurations
- Easily import the contents of directories
- Project-based configuration of python path
- Search and replace project files



# Other IDE Windows

- Todo list
- Find in Files
- Regular Expression Tester
- Unit tests
- Messages Window (diagnostics)
- Output Window (output of external processes)





# The Pyscripter Editor

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# Python features



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- Understanding Python syntax and indentation
- Run scripts without saving them
- Code IntelliSense
  - Code completion
  - Parameter completion (function signatures)
  - Code Hints
  - Go to definition (using Ctrl-click) and back-forward navigation as in Delphi
  - Find references
- Function list



# Other editor features

- Code templates
- File templates
- Powerful parameter substitution
- OLE drag & drop supporting Unicode and html clipboard formats
- Drop target for files
- Support for font ligatures
- Several VS code commands implemented (e.g., move/copy block up/down)





# Code completion options



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## IDE Options

### - Code Completion

+ Auto completion font	(TFont)
Case sensitive	<input checked="" type="checkbox"/> True
Code completion list size	10
Complete as you type	<input checked="" type="checkbox"/> True
Complete Python keywords	<input checked="" type="checkbox"/> True
Auto-complete with one entry	<input checked="" type="checkbox"/> True
Complete with word-break characters	<input checked="" type="checkbox"/> True
Editor code completion	<input checked="" type="checkbox"/> True
Interpreter code completion	<input checked="" type="checkbox"/> True
Special packages	os,pandas,numpy

### + Code Explorer

### + Editor

### + File Explorer

### + File Filters

### + IDE

### + Miscellaneous

### - Project Explorer

OK

Cancel



# SPLIT EDITING



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- Working on different views of the same file
- Split horizontally or vertically
- Synchronized editing

The screenshot shows an IDE with two vertical panes. The left pane contains Python code for a module, including a docstring, author information, and a list of imports. The right pane contains Python code for three utility functions: `ismodule`, `isclass`, and `ismethod`, each with a docstring and implementation.

```
"""  
# This module is in the public domain. No warranty  
__author__ = ('Ka-Ping Yee <ping@lfw.org>',  
             'Yury Selivanov <yseivanov@sprymix.c  
import abc  
import ast  
import dis  
import collections.abc  
import enum  
import importlib.machinery  
import itertools  
import linecache  
import os  
import re  
import sys  
import tokenize  
import token  
import types  
import warnings  
import functools  
import builtins
```

```
def ismodule(object):  
    """Return true if the object is a module.  
  
    Module objects provide these attributes:  
        __cached__      pathname to byte compiled file  
        __doc__         documentation string  
        __file__        filename (missing for built-in)  
    return isinstance(object, types.ModuleType)  
  
def isclass(object):  
    """Return true if the object is a class.  
  
    Class objects provide these attributes:  
        __doc__         documentation string  
        __module__      name of module in which this c  
    return isinstance(object, type)  
  
def ismethod(object):  
    """Return true if the object is an instance method  
  
    Instance method objects provide these attributes:  
        __doc__         documentation string  
        __name__        name with which this method wa  
        func            function object containing im
```





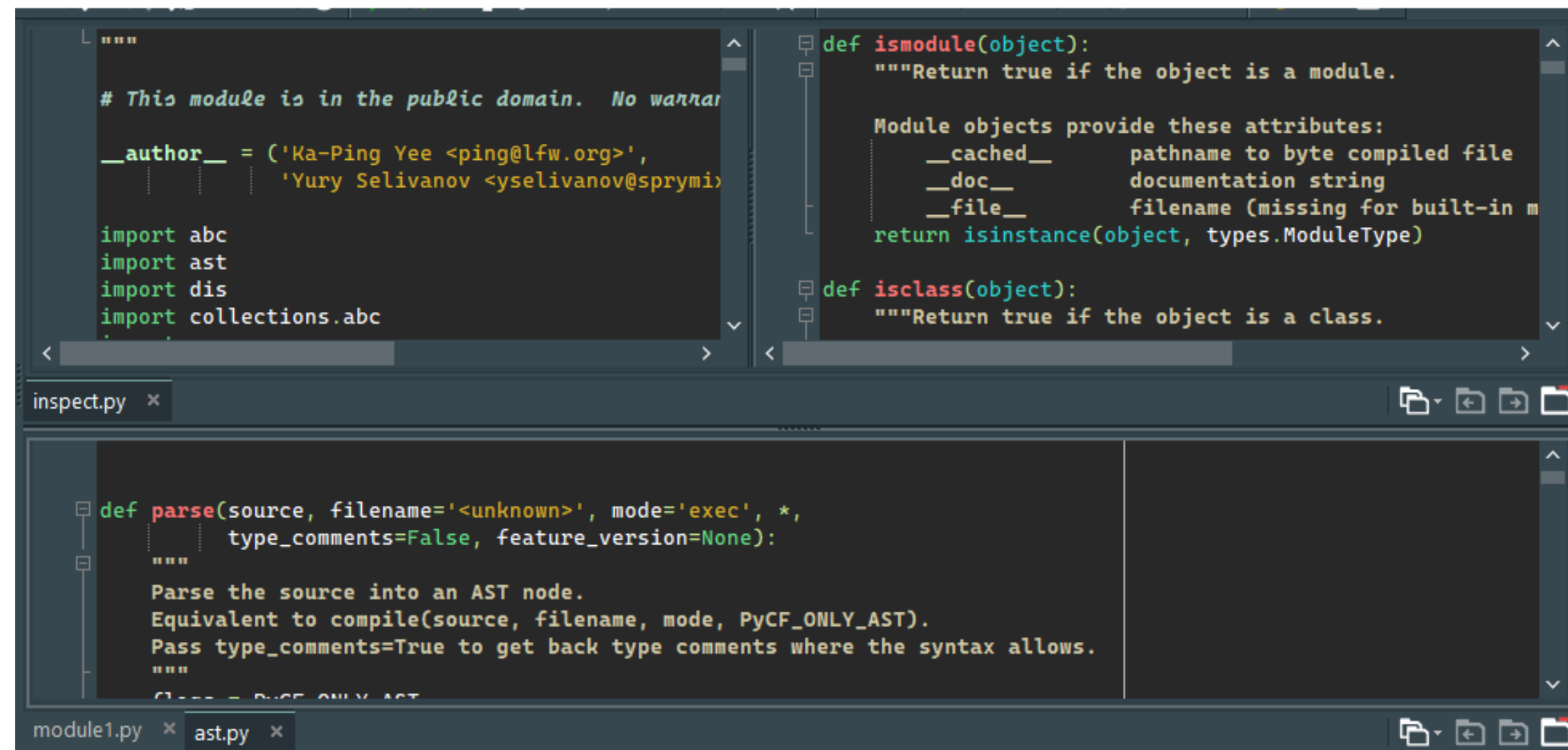
# SPLIT WORKSPACES



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- Separate workspaces
- Split horizontally or vertically
- Move files between workspaces with drag & drop



# Editor views – Module Documentation



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Source

Disassembly

Doc

+

+

×

`signature() - get a Signature object for the callable`

Modules

[abc](#)

[ast](#)

[builtins](#)

[collections](#)

[dis](#)

[enum](#)

[functools](#)

[importlib](#)

[itertools](#)

[linecache](#)

[os](#)

[re](#)

[sys](#)

[token](#)

[tokenize](#)

[types](#)

[warnings](#)

Classes

[builtins.Exception\(builtins.BaseException\)](#)

[ClassFoundException](#)

[EndOfBlock](#)



# Editor views - Disassembly



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```
Disassembly of inspect.py
'''
```

```
Disassembly of ArgInfo:
```

```
Disassembly of __getnewargs__:
```

```
466      0 LOAD_DEREF      0 (_tuple)
      2 LOAD_FAST      0 (self)
      4 CALL_FUNCTION  1
      6 RETURN_VALUE
```

```
Disassembly of __new__:
```

```
  1      0 LOAD_GLOBAL      0 (_tuple_new)
      2 LOAD_FAST      0 (_cls)
      4 LOAD_FAST      1 (args)
      6 LOAD_FAST      2 (varargs)
      8 LOAD_FAST      3 (keywords)
     10 LOAD_FAST      4 (locals)
     12 BUILD_TUPLE      4
     14 CALL_FUNCTION      2
     16 RETURN_VALUE
```

```
Disassembly of __new__:
```





# Python Debugging

A full-page background image featuring an astronaut in a white spacesuit sitting on a metal crate on the moon's surface. The astronaut is holding a small device in their right hand. In the background, the Earth's curved horizon is visible against a starry space, with a bright orange and yellow lava flow on the lunar surface. A small lunar rover is parked on the left side of the frame.



# Python debugging

- Breakpoints
  - Enable/disable
  - Set condition
- Debugger commands
  - Debug
  - Run to cursor
  - Step into
  - Step over
  - Step out
  - Pause
  - Abort
- Debugger hints



# Debug windows I



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**Variables** ✕

Name	Type	Value
+ { } globals	dict	
- { } locals	dict	
n	int	2

Namespace: Frame(Function: "recur\_fibo" of module: "C:\Temp\Python\fibonacci.py")

**Call Stack** ✕

Threads	Function Name	File Name	Line
MainThread	recur_fibo	C:\Temp\Python\fibonacci.py	7
	recur_fibo	C:\Temp\Python\fibonacci.py	7
	recur_fibo	C:\Temp\Python\fibonacci.py	7
	recur_fibo	C:\Temp\Python\fibonacci.py	7
	main	C:\Temp\Python\fibonacci.py	19
	<module>	C:\Temp\Python\fibonacci.py	22





# Debug Windows II



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Breakpoints		
File Name	Line	Condition
<input type="checkbox"/> C:\Temp\Python\BlockingThreads.py	15	
<input checked="" type="checkbox"/> C:\Temp\Python\fibonacci.py	7	

Watches		
Watches	Type	Value
..... n	int	2





# Thank you!

Get the code:  
[github.com/Embarcadero/CodingBootCamp2022](https://github.com/Embarcadero/CodingBootCamp2022)

